FEEDER CATTLE
COSTS AND RETURNS

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FEEDER CATTLE COST AND RETURNS
1940-1951

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INTRODUCTION

Feeding beef cattle is an important enterprise on many farms in Minnesota. The purpose of this report is to present data on the costs and returns from this type of feeding operation and to illustrate the type of information which can be secured from farm records. These data were secured from the records of the Farm Management Services operating in the southern part of the state. (1)

The facts presented in this report differ from that in the annual reports prepared for the Farm Management Services in that all the information is on a "lot" basis beginning with the time of purchase and continuing until the animals are sold. The data presented annually are on a calendar year basis. This usually results in combining portions of the feeding periods for different lots of cattle in one report. These data by lots as included in this report represents results from feeding cattle under ordinary farm conditions. They should be helpful to individual farmers for comparison with their own accomplishment or for the purpose of planning their feeding operations. Although the farmers included in this study are, in general, above average in managerial ability, the quantity of feed required to produce 100 pounds gain in weight represents an accomplishment well within the grasp of most farmers.

Each enterprise statement for cattle shows the quantity and market value of feeds consumed per 100 pounds net gain in weight, the financial returns, and other information on rates of production. The enterprise statements also show the amount by which the total return from the feeding operations exceeds the feed cost. Two measures of "return above feed cost" are shown: (1) the return above feed cost per 100 pounds net gain in weight and (2) the return per $100 of feed. It must be understood that in neither case is it a "net return". In addition, there are other costs such as labor, power, shelter, taxes, insurance, interest, equipment, and other items that

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(1) Southwest Minnesota Farm Management Service, Southeast Minnesota Farm Management Service and the Farm Management Service for Veterans Taking On-The-Farm Training.

must be met from the gross income. However, feed is the largest single item and may constitute up to 75 per cent or more of the total cost of fattening cattle.

Arithmetic averages are used throughout this report. Equal weight is given to the data from each lot regardless of the number of animals fed. Wherever eleven-year averages are given, they represent arithmetic averages giving each year equal weight.

MINNESOTA PRICES

The farm-raised feeds were valued at average farm prices. The purchased feeds were valued at the price the farmer paid for them. Feeds for which there is no regularly established price, such as corn silage, were valued on the basis of their feeding value relative to similar feeds for which a market price was available. The average annual price for the major feeds utilized by feeder cattle is shown in table 1.

Table 1. Average Annual Feed Prices

	1940-1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
						Dollars					
Alfalfa hay, per ton	8.00	8.00	11.00	15.00	15.00	16.00	22.00	20.00	20.00	21.00	19.00
Timothy and/or brome, per ton	5.14	5.15	6.75	9.00	9.00	9.60	12.50	11.60	11.60	12.20	11.00
Corn silage, per ton	2.34	2.75	3.62	5.00	5.00	5.50	8.00	5.85	6.00	6.70	6.00
Ear corn, per bu.	.46	.65	.88	.90	.84	1.14	1.54	1.64	1.02	1.20	1.36
Oats, per bu.	.29	.41	.60	.70	.64	.70	.90	.88	.59	.72	.81
Linseed oil meal, per cwt.	1.87	2.42	2.55	2.85	2.88	3.30	4.25	4.55	4.00	3.95	3.85
Soybean oil meal, per cwt.	1.91	2.75	2.82	3.15	3.00	3.80	4.80	5.10	4.05	3.95	4.50

Stocker and feeder cattle prices at South St. Paul for the past 3 years are presented in figure 1. Although farmers in southern Minnesota secure cattle for their feed lots from many sources the prices reported on the South St. Paul market are reasonably representative of the relative price situation.

The average price paid for feeder cattle by farmers included in this study and the price received for fat cattle are shown in figure 2. The difference between the purchase and sale price is the price spread. Note that only in the 1948-1949 feeding period did a negative price spread exist. The purchase price exceeded the sale price in that feeding period by an average of 45 cents for the lots studied. In 10 of the 11 years there was a positive average price spread ranging from $1.20 per 100 pounds in the 1940-41 feeding period to $8.50 in the 1947-48 feeding period.

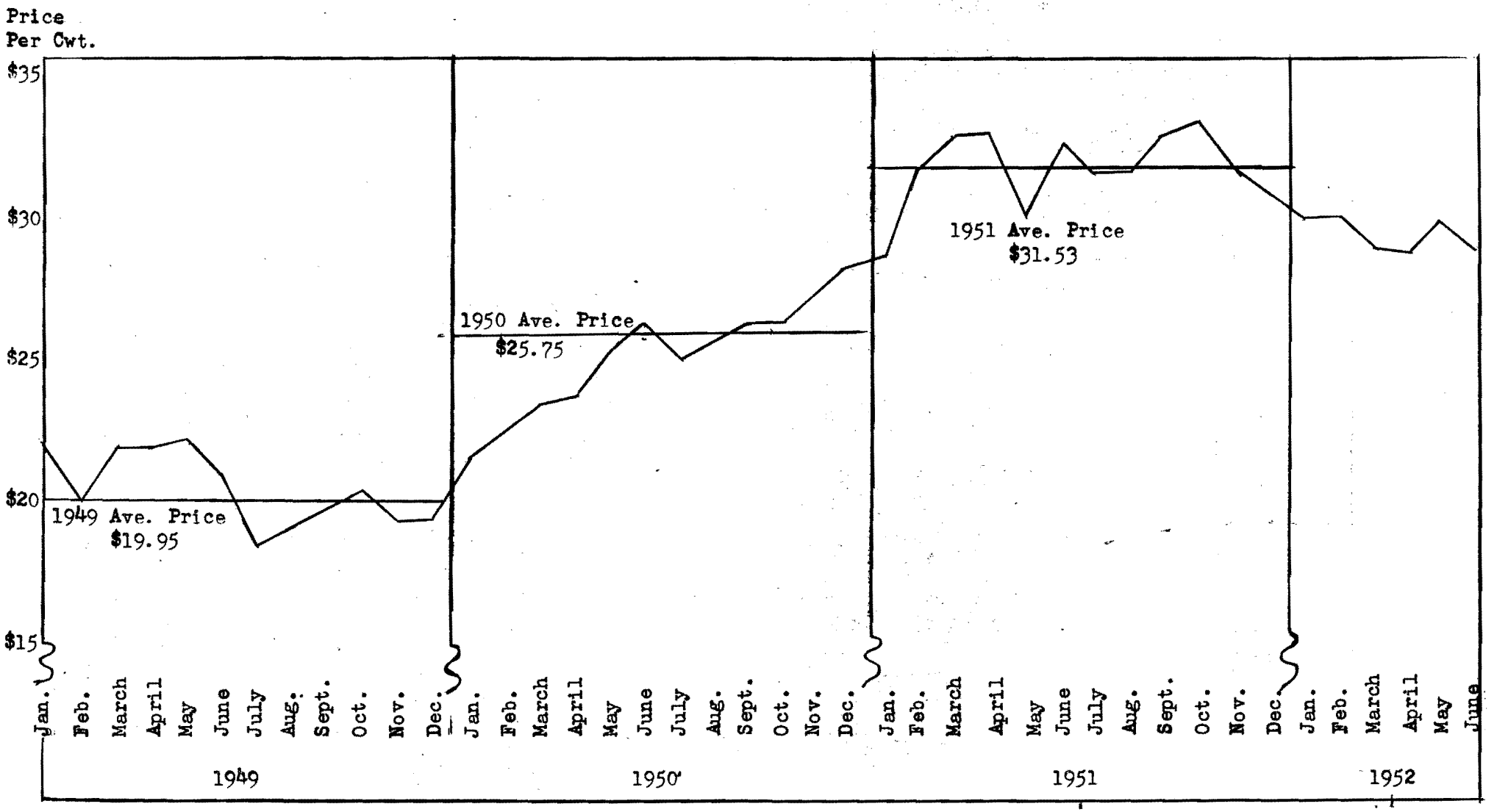

Figure 1. Average Monthly and Yearly Prices
Stockers and Feeders, All Weights, So. St. Paul, 1949 - 1952
(Compiled from Livestock Market News Statistics and
Related Data, U.S.D.A. PMA 1949 - 51)

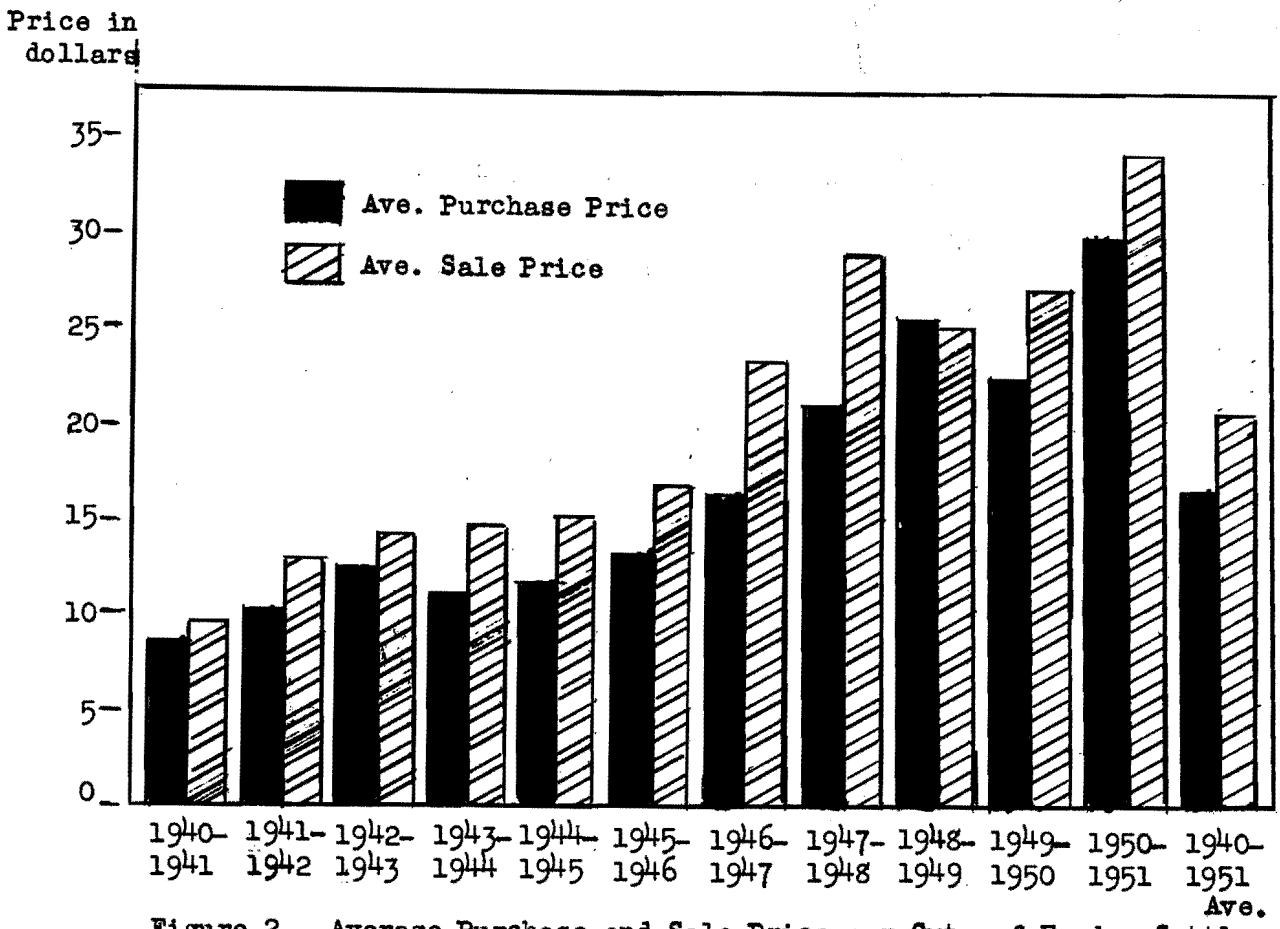

Figure 2. Average Purchase and Sale Price per Cwt. of Feeder Cattle Fed by Feeding Periods 1940-1951

TOTAL FEED COSTS AND RETURNS FROM THE CATTLE FEEDING ENTERPRISE

The average return above feed cost per lot for the two feeding periods 1949-1951 is presented in Table 2. The "return above feed cost" must cover the expense to labor, power, shelter, insurance, and other miscellaneous items of cost. Whatever is left after these expense items are covered is the "net" to the operator. These data give some indication as to the average size of the feeding operation and the contribution the enterprise makes to the farmers' income.

Table 2. Average Return Above Feed Cost Per Lot, 1949-1951

Item	Your lot	Average of all lots
	1949-1950	
Number of lots		27
Total Returns	_____	$6398
Total Feed Cost	_____	3428
Return Above Feed Cost	_____	2970
	1950-1951	
Number of lots		32
Total Returns	_____	$8895
Total Feed Cost	_____	4894
Return Above Feed Cost	_____	4001

COSTS AND RETURNS PER 100 POUNDS NET GAIN IN WEIGHT

A statement for each of the two feeding periods 1949-50 and 1950-51 is given in tables 3 and 4. These statements show the average return above feed cost and other related data for all lots. Included are the averages of the one-third of the lots high in return above feed cost and the one-third low in return above feed cost. Averages for each of the eleven feeding periods are shown in table 5.

The average length of feeding period was 219 days for the 265 lots studied. The feeding period ranged from 60 to 578 days.

The average weight per head purchased ranged from 331 pounds for one lot to 1073 pounds for another with an average purchased weight of 641 pounds per head. While this is a wide range, there is no indication that the purchase weight of the cattle fed had any effect on the return above feed.

The net increase in value is calculated by substracting the value of the purchases from the value of the sales. Animals transferred into a lot were handled as a purchase and animals transferred out or slaughtered for home use were handled as a sale. The pounds produced is determined in a manner similar to the method of calculating net value increases.

Corn, legume hay and silage were the principal feeds utilized. Approximately 91 per cent of the concentrate feed was corn with two per cent being small grain and seven per cent commercial feed. There was little variation from this in both the high and low return groups. Of the dry roughage consumed 79 per cent was legume hay. Silage was fed to 187 of the 265 lots studied; 105 of the 265 lots had some pasture. There has been some increase in pasture use in the more recent feeding periods. During the last five feeding periods, 1946-1951, 49 per cent of the lots fed had accres to pasture compared with 30 per cent during the six preceding feeding periods, 1940-1946.

Since 1945 the number of days spent on pasture increased markedly. From 1940-1945 the time spent on pasture per lot averaged 16 days and ranged from 10 days in the 1941-1942 feeding period to 25 days in the 1940-1941 period. From 1946 to 1951 the time on pasture averaged 37 days per lot with a range of 25 days in the 1948-1949 feeding period to 56 days in the 1950-1951 period. Most of the farmers in this study are utilizing more pasture in their cattle feeding programs than formerly. A comparison of feeds consumed, costs, and returns for those feeder cattle lots pastured and those not pastured are shown for the 1946-1951 feeding periods in table 6. The feeding value of pasture was estimated at $1.35 to $1.50 per head per month. The effect of price spread on the net increase in value was to the advantage of the lots not pastured due to the heavier average purchase weight of these cattle. Approximately $9.25 of the $38.10 average net increase in value for the lots not pastured was accounted for by the price spread of $4.78 whereas $7.40 of the $37.54 average net increase in value for the lots pastured was accounted for by the price spread of $5.04. After eliminating the effect of price spread the return over feed cost of the lots pastured would be $6.75 per 100 lbs. net weight produced compared with $2.16 for the lots not pastured. The lots pastured were purchased at lighter weights and held on the farm for an average of 57 more days than the lots not pastured. Thus it appears that for the lots in this comparison pasturing was a profitable practice.

Table 3. Cost and Returns, 1949-1950 Feeding Period

Items	Your farm	Average of 27 lots	9 lots highest in return above feed	9 lots lowest in return above feed
Feeds per cwt net gain in wt, lbs:				
Corn	_____	654	483	904
Small grain	_____	22	6	17
Commercial feeds	_____	42	53	34
Legume hay	_____	142	91	222
Other hay	_____	72	68	81
Fodder and stover	_____	5	16	-
Total concentrates	_____	718	542	955
Total hay and fodder	_____	219	175	303
Silage	_____	470	595	454
Pasture days	_____	9	18	6
Total digestible nutrients*	_____	736	565	969
% TDN that is protein	_____	11.7	12.3	11.7
Feed costs per cwt net gain in wt:				
Concentrates	_____	$15.49	$11.89	$19.98
Roughages	_____	3.47	3.35	4.32
Pasture	_____	.43	.87	.26
Total feed costs	_____	$19.39	$16.11	$24.56
Net increase in value per cwt	_____	$36.19	$39.27	$35.17
Return above feed cost per cwt	_____	$16.80	$23.16	$10.61
Return for $100 feed	_____	$187	$244	$143
Purchase price per cwt	_____	$22.23	$23.15	$21.18
Sale price per cwt	_____	$27.23	$29.09	$25.51
Price spread	_____	$5.00	$5.94	$4.33
Wt per head bot, lbs	_____	654	664	698
Wt per head sold, lbs	_____	1044	1075	1021
Total gain per head, lbs	_____	390	411	323
Daily gain per head, lbs	_____	1.6	1.6	1.7
Number of days on farm	_____	241	288	189
Number of days on pasture	_____	36	70	16
Number of head bot per lot	_____	43	37	41
Per cent death loss	_____	.7	1.2	.3
Net gain in wt, lbs	_____	17,680	17,351	13,547

* Not including nutrients received from pasture.

Table 4. Cost and Returns, 1950-1951 Feeding Period

Items	Your farm	Average of 32 lots	11 lots highest return above feed	11 lots lowest in return above feed
Feeds per cwt net gain in wt, lbs:				
Corn	____	675	627	786
Small grain	____	13	6	14
Commercial feeds	____	52	68	43
Legume hay	____	226	214	272
Other hay	____	61	60	59
Fodder and stover	____	1	-	4
Total concentrates	____	740	701	843
Total hay and fodder	____	288	274	335
Silage	____	427	543	338
Pasture days	____	12	10	15
Total digestible nutrients*	____	813	785	909
% TDN that is protein	____	11.8	11.8	11.8
Feed costs per cwt net gain in wt:				
Concentrates	____	$18.76	$17.92	$21.42
Roughages	____	3.94	4.30	4.19
Pasture	____	.56	.48	.69
Total feed costs	____	$23.26	$22.70	$26.30
Net increase in value per cwt	____	$42.28	$47.95	$38.69
Return above feed cost per cwt	____	$19.02	$25.25	$12.39
Return for $100 feed	____	$182	$211	$147
Purchase price per cwt	____	$30.08	$28.12	$31.46
Sale price per cwt	____	$34.33	$33.95	$34.52
Price spread	____	$4.25	$5.83	$3.06
Wt per head bot, lbs	____	622	716	618
Wt per head sold, lbs	____	1043	1087	1056
Total gain per head, lbs	____	421	371	438
Daily gain per head, lbs	____	1.6	1.6	1.7
Number of days on farm	____	258	238	263
Number of days on pasture	____	56	50	65
Number of head bot per lot	____	51	56	46
Per cent death loss	____	1.5	.6	1.4
Net gain in wt, lbs	____	21,039	21,900	18,472

* Not including nutrients received from pasture.

Table 5. Average Costs and Returns, 1940-1951

	Items	1940-1941	1941-1942	1942-1943	1943-1944
1	Number of lots	26	22	16	15
	Feeds per cwt net gain in wt, lbs:				
2	Corn	575	912	911	747
3	Small grain	159	23	41	27
4	Commercial feeds	24	51	49	46
5	Legume hay	171	199	315	268
6	Other hay	65	55	92	37
7	Fodder and stover	42	47	68	17
8	Total concentrates	758	986	1001	820
9	Total hay and fodder	278	301	475	322
10	Silage	600	491	309	591
11	Pasture days	7	3	4	4
12	Total digestible nutrients*	841	995	1097	924
13	% T.D.N. that is protein	11.1	11.1	11.6	11.5
	Feed costs per cwt net gain in wt				
14	Concentrates	$6.41	$11.55	$15.27	$15.08
15	Roughages	1.62	1.42	2.35	3.38
16	Pasture	.23	.10	.12	.17
17	Total feed costs	$8.26	$13.07	$17.74	$18.63
18	Net increase in value per cwt	$11.67	$18.05	$18.25	$21.48
19	Return above feed cost per cwt	$ 3.41	$ 4.98	$ .51	$ 2.85
20	Return for $100 feed	$141	$138	$103	$115
21	Purchase price per cwt	$ 8.32	$10.10	$12.27	$10.82
22	Sale price per cwt	$ 9.52	$12.52	$13.94	$14.22
23	Price spread	$ 1.20	$ 2.42	$ 1.67	$ 3.40
24	Wt per head bot, lbs	566	702	658	615
25	Wt per head sold, lbs	922	1045	968	929
26	Total gain per head, lbs	356	343	310	314
27	Daily gain per head, lbs	1.6	1.7	1.6	1.6
28	Number of days on farm	222	203	197	195
29	Number of days on pasture	25	10	12	13
30	Number of head bot per lot	26	43	45	38
31	Per cent death loss	1.2	1.1	1.3	.8
32	Net gain in wt, lbs	9,840	15,751	13,508	11,593

* Not including nutrients received from pasture

Table 5. (con't)

Items	1944-1945	1945-1946	1946-1947	1947-1948	1948-1949	1949-1950	1950-1951	Ave. 1940-1951
1	30	22	20	23	32	27	32	265
2	783	757	841	621	684	654	675	742
3	16	32	44	38	47	22	13	42
4	42	49	43	55	56	42	52	46
5	151	258	231	221	238	142	226	220
6	50	96	93	140	88	72	61	77
7	59	14	33	-	-	5	1	26
8	841	838	928	714	787	718	740	830
9	260	368	357	361	326	219	288	323
10	358	402	391	626	446	470	427	465
11	5	6	13	11	6	9	12	7
12	869	930	992	855	874	736	813	902
13	11.2	11.7	11.3	12.1	12.0	11.7	11.8	11.6
14	$13.35	$14.90	$25.29	$26.19	$16.67	$15.49	$18.76	$16.27
15	2.32	3.34	4.45	4.87	4.15	3.47	3.94	3.21
16	.19	.25	.60	.47	.31	.43	.56	.31
17	$15.86	$18.49	$30.34	$31.53	$21.13	$19.39	$23.26	$19.79
18	$22.42	$25.59	$39.59	$45.67	$25.35	$36.19	$42.28	$27.86
19	$ 6.56	$ 7.10	$ 9.25	$14.14	$ 4.22	$16.80	$19.02	$ 8.07
20	$141	$138	$130	$145	$120	$187	$182	$140
21	$11.49	$12.90	$16.35	$20.97	$25.69	$22.23	$30.08	$16.47
22	$15.17	$16.75	$23.45	$29.47	$25.24	$27.23	$34.33	$20.16
23	$ 3.68	$ 3.85	$ 7.10	$ 8.50	$ -.45	$ 5.00	$ 4.25	$ 3.69
24	651	709	635	628	611	654	622	641
25	1001	1043	927	975	1032	1044	1043	993
26	350	334	292	347	421	390	421	352
27	1.7	1.7	1.5	1.5	1.7	1.6	1.6	1.6
28	211	200	191	233	254	241	258	219
29	18	20	34	35	25	36	56	26
30	50	60	53	47	42	43	51	45
31	.6	1.4	1.0	.5	1.9	.7	1.5	1.1
32	17,729	19,757	16,229	15,470	17,359	17,680	21,039	15,996

Table 6. Comparison of Feeds Consumed, Costs, Returns and Other Factors for Feeder Cattle Pastured Versus Those not Pastured, 1946-1951

	Fed on Pasture	Not Pastured
Number of lots	66	68
Number of days on pasture per lot	76	-
Feed per 100 lbs net gain in weight:		
Concentrates, lbs	717	831
Dry Roughage, lbs	304	307
Silage, lbs	449	490
Pasture, days	21	-
Cost and returns per 100 lbs net gain in weight:		
Feed Costs		
Concentrates	$18.36	$22.45
Roughages	4.02	4.23
Pasture	1.00	-
Total feed cost	$23.38	$26.68
Net Increase in value	37.54	38.10
Return over feed	14.16	11.42
Return for $100 feed	$175	$156
Purchase price per 100 lbs.	$23.20	$22.85
Sale price per 100 lbs.	$28.24	$27.63
Price spread	$ 5.04	$ 4.78
Weight per head bought	594	665
Weight per head sold	998	1008
Gain per head	404	343
Days on farm	262	205
Per cent death loss	1.2	1.0

RANGE IN RETURN ABOVE FEED COST

The range in return above feed cost per 100 pounds net gain in weight for the eleven-year period 1940-1951 between the one-third of the lots high in return above feed and the low one-third was $13.76 (table 7). These differences in the returns received by farmers from year to year are due primarily to changes in the general price levels, and are not generally within his control. The variation among lots in any one year are to a large extent within the control of the farmer. Some of the major factors causing this variation among lots are discussed in the following paragraphs.

Table 7. Range in Return Above Feed Cost from Cattle per 100 Pounds Net Gain in Weight, 1940-1951

Year	1/3 highest in return above feed	Average	1/3 lowest in return above feed	Range
1940-1941	$ 6.29	$ 3.41	$ .66	$ 5.63
1941-1942	8.21	4.98	2.41	5.80
1942-1943	5.03	.51	-4.76	9.79
1943-1944	9.43	2.85	-3.40	12.83
1944-1945	10.73	6.56	1.56	9.17
1945-1946	12.93	7.10	1.15	11.78
1946-1947	24.04	9.25	-7.83	31.87
1947-1948	25.06	14.14	4.10	20.96
1948-1949	12.14	4.22	-6.00	18.14
1949-1950	23.16	16.80	10.61	12.55
1950-1951	25.25	19.02	12.39	12.86
Average of 11 yrs	14.75	8.07	.99	13.76

RELATION OF FEED COST TO RETURN ABOVE FEED COST

One of the important factors affecting the return above feed cost from the lots studied was the cost of feed. The cost of the feed has been expressed as the cost of the feed required to produce 100 pounds net gain in weight. The one-third of the operators low in feed cost produced 100 pounds of beef for $15.72 and the one-third high in feed cost spent $24.90 (table 8). The difference between the high and the low groups in the cost of feed was $9.18 per 100 pounds of beef produced.

The relationship between feed cost and return above feed is very marked. The one-third of the lots low in feed cost realized a return above feed of $11.03 per 100 pounds net gain in weight as compared to $4.49 for the one-third of the lots high in feed cost. With an average production of 15,996 pounds of beef per lot this is a difference of $1046 in return over feed between the high and low feed cost lots.

Table 8. Relation of Feed Cost per 100 Pounds Net Gain in Weight to Various Beef Cattle Production Factors, 1940-1951

Feed cost per cwt. net gain in weight		Return over feed*	Pounds feed per 100 pounds net gain in weight				
Range	Average		Concentrates	Hay & fodder	Silage	Pasture days	T.D.N.**
Low third	$15.72	$11.03	629	252	447	8	687
Middle third	18.65	8.81	755	328	510	6	868
High third	24.90	4.49	1102	389	431	6	1150

	% prot in ration**	Net increase in value*	Average price received	Price spread	Wt. per head bought	Lbs. gain per head	Lbs. produced
Low third	11.4	$26.75	$20.41	$3.53	576	390	17606
Middle third	11.6	27.46	20.15	3.79	633	360	17687
High third	11.7	29.39	19.95	3.76	712	309	13012

*Per 100 pounds net gain in weight

** Not including nutrients received from pasture

RELATION OF PRICE SPREAD TO RETURN ABOVE FEED COST

The spread between the purchase and sale price is generally recognized as having an important influence on profits from cattle feeding. In fact, in many reports on cattle feeding operations, price spread is considered the most important factor affecting profits. The difference in return above feed between the one-third of the lots with a wide price spread and the one-third of the lots with a narrow price spread was $8.77 per 100 pounds net gain in weight (table 9). This is a total difference of $1,403 per lot for the average production of 15,996 pounds per lot. Only in the 1948-1949 period did a negative average price spread prevail. Here the purchase price exceeded the sale price by an average of $.45 in the lots studied. However even in that feeding period the net returns were sufficient to cover feed costs in 23 of the 32 lots.

Table 9. Relation of Price Spread to Various Beef Cattle Production Factors, 1940 - 1951.

Price spread		Per 100 lbs. net gain in weight				Average	Average
		Return	Total	Net		purchase	sale
Range	Average	over feed*	feed cost*	increase in value	T.D.N.**	price	price
Low third	$1.79	$ 3.56	$20.93	$24.49	953	$17.33	$19.12
Middle third	3.66	8.36	19.30	27.66	889	16.32	19.98
High third	5.61	12.33	19.10	31.43	863	15.77	21.38

	Weight per head bought	Weight per head sold	Pounds gain per head	Lbs. pro-duced	No. days on farm	No. of head bought
Low third	668	988	320	13799	199	43
Middle third	620	969	349	12899	216	37
High third	632	1020	388	21116	240	55

* Per 100 pounds net gain in weight
** Not including nutrients received from pasture

CUMULATIVE EFFECT OF EXCELLING IN A NUMBER OF MANAGEMENT FACTORS

The return above feed cost and the profit of the feeding enterprise is affected by a number of management factors. Because of the interrelation among these factors and the effect of the interrelation on the profitableness of the enterprise it is difficult to measure the effect of each factor separately. Two of the factors have already been discussed--feed cost and price spread. Others for which data are available from this study are: (1) rate of daily gain, (2) per cent protein in the ration, and (3) death loss. Although the individual effect of each has not been measured separately, the cumulative effect of these five factors on returns is shown in figure 3.

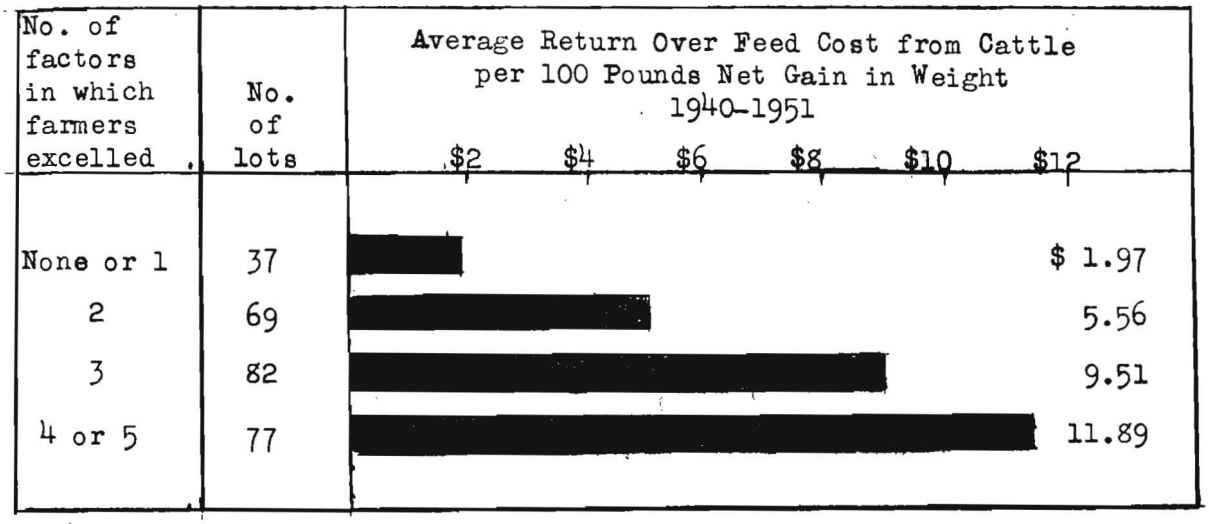

Figure 3. Average Return over Feed Cost from Cattle per 100 Pounds Net Gain in Weight Grouped according to Number of Selected Factors in Which Farmers Excelled, 1940-1951.

Some farmers excelled in nearly all the factors while others were below the average of the group in most of them. The 77 farmers who excelled in four or five factors received a return above feed cost of $11.89 per 100 pounds net gain in weight. The 37 farmers who were below the average in all or above in only one factor received a return barely large enough to cover the cost of the feed for their lots of cattle. The difference between the extremes amounts to $10.92 per 100 pounds net gain in weight. This is a difference of $1747 for the average production of 15,996 pounds of beef per lot. These five factors alone are responsible for a considerable proportion of the variation among these farmers in the return above feed cost secured from feeding cattle.